Article

Reviewing Vietnam Geography Textbooks from an ESD Perspective

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Abstract: This paper examines how Education for Sustainable Development (ESD) is transmitted in the context of geography education by investigating the extent to which geography textbooks in Vietnam promote ESD principles. At the same time, the paper helps clarify how ESD is anchored in formal education and how ESD is contextualized in the specific context of Vietnam. This study involved a qualitative analysis supported by MAXQDA software (VERBI, Berlin, Germany), where geography textbooks from grade 6 to grade 12 in Vietnam were analysed to determine (1) how sustainable development (SD) issues are integrated into the content of the textbooks and (2) the extent to which questions and tasks in the textbooks promote competencies regarding the demands of ESD. The findings show that the textbooks somewhat promote ESD through their content and didactic approach. However, there are still some drawbacks. In terms of content, the textbooks' main approaches to both SD content and geography core knowledge are description and indoctrination. In terms of their didactic approach, almost all questions/tasks ask students to memorize and reproduce information and rote learning rather than helping them promote ESD competencies. This reconfirms that ESD remains an add-on issue to an overcrowded curriculum, and the geography textbooks reflect an instrumental approach to ESD.

Keywords: Education for Sustainable Development (ESD); Vietnam; geography textbook; textbook analysis

1. Introduction

Education for Sustainable Development (ESD) has been identified as both a goal and a means for achieving all of the recently developed Sustainable Development Goals (SDGs) [1]. To promote ESD, the United Nations (UN) approved the Decade of Education for Sustainable Development (DESD) initiative, spanning from 2005 through to 2014 [2], and its follow-up initiative, the Global Action Programme (GAP) [3]. While ESD has had worldwide political support, the literature on ESD has mostly focused on case studies in developed nations; in other words, ESD has not yet been developed in Global South countries [4–6]. Indeed, in a review of 123 ESD-related articles selected from international peer-reviewed publications, Karatzoglou [7] showed that the majority (60.2%) of ESD articles come from Europe and the United State, while Asia and Africa account for only 8.9%. Further, Manteaw [8] (p. 376) showed that ESD rhetoric usually overshadows the "region's unique social, ecological, economic and political challenges". Therefore, it is imperative to contextualize ESD to each nation and region's unique context [4,5,8–10].

ESD has a cross-curricular dimension [11] (p. 49), but the subject of geography is especially relevant as one that "could claim ESD" [12] (p. 18). The linkages between geography and ESD are addressed in The Lucerne Declaration on Geographical Education for Sustainable Development, which states that the discipline's contributions to ESD are based on the concept of the 'Human-Earth' ecosystem [13].

The document also identifies how geography education can foster ESD both in terms of content and pedagogy. All 17 of the named SDGs ('no poverty', 'zero hunger', 'good health and well-being', 'quality education', 'gender equality', 'clean water and sanitation', 'affordable and clean energy', 'decent work and economic growth', 'industry, innovation and infrastructure', 'reduced inequalities', 'sustainable cities and communities', 'responsible consumption and production', 'climate action', 'life below water', 'life on land', 'peace, justice and strong institutions', 'partnerships for the goals') also contain geographical connotations.

In Vietnam, SD concepts and issues were introduced in education in the 2000s, with the adoption of Vietnam Agenda 21 [14] and the National Action Plan on ESD in Vietnam 2010–2014 [15]. Principles of ESD have been favoured in Vietnam in certain ways (see [4–6]). For example, some SD themes have been promoted through integrating teaching at school and in extracurricular activities under a partnership between the Ministry of Education and Training (MOET) and other stakeholders, such as UNESCO (United Nations Educational, Scientific and Cultural Organization) and non-governmental organisations, since 2009, i.e., environmental education, saving energy, climate change education, education for disaster risk reduction, children's rights and HIV/AIDS [16,17]. However, the National Action Plan on ESD in Vietnam 2010–2014 indicates that the integration had faced multiple difficulties, as the educational programs are overloaded [15] (p. 6). Besides, there has been no high-level political and financial support for ESD. Additionally (and not surprisingly), there has not been a systematic overview of how ESD is anchored in formal education.

To investigate the implementation of ESD into formal education and "its interconnectedness with subject-specific (in this case geographical) knowledge" [11] (p. 49), one could look towards the "institutional transfer, the process of teaching and learning, competence assessment, or educational media" [11] (p. 49). Specifically, the educational media of textbooks plays a crucial role in pedagogical practice in Vietnam. In fact, they are the most influential educational media in schools since there is only one textbook set in the country and it is usually the only available teaching means in schools, especially in rural areas. In general, textbooks are especially interesting to investigate because they reflect thought patterns and moral concepts which are interpreted in a social and political negotiation [18]. Furthermore, textbooks represent a translation of the curriculum and, according to Bagoly-Simó [19] (p. 111), they are the "secret curriculum" and are used as instruments to control educational content.

Given the importance of textbooks in Vietnam, this paper examines how ESD is transmitted through geography education by investigating the extent to which geography textbooks in Vietnam promote ESD principles. At the same time, it helps clarify how ESD is anchored in formal education and how ESD is contextualized in the specific context of Vietnam; both of these outcomes will help provide more input for ESD literature, which so far contains few empirical studies in Global South countries.

2. Materials

In Vietnam, textbooks play a crucial role in pedagogical practice. There is only one textbook set for each level of education, and all are published by the Vietnam Education Publishing House.

Geography is taught as an independent and compulsory subject in both lower secondary schools (grades 6–9) and upper secondary schools (grades 10–12). Therefore, geography textbooks from grade 6 to grade 12 were chosen for analysis. The contents of the textbooks mentioned above cover a wide range of themes, from physical geography to human geography. Geography 6 provides basic knowledge on the Earth and its natural components. Geography 7 includes three main parts: human geography, geographic environments, and regional foci (Africa, North America, Central and South America, Antarctica, Australia/Oceania, North Europe, West and Central Europe, South Europe, East Europe). Geography 8 includes two main parts: nature and humans in continents (the Middle East, South Asia, East Asia, Southeast Asia), and the physical geography of Vietnam. Geography 9 introduces the human geography of Vietnam. For upper secondary school, geography textbooks are designed so that they repeat the themes from lower secondary geography but at a higher level with more in-depth information. Respectively, Geography 10 provides knowledge on physical and human geography;

Geography 11 introduces regional foci; and Geography 12 includes physical, human geography and geographical regions of Vietnam.

Each textbook presents questions at the end of each paragraph, lesson and chapter. There are a total of 1718 questions included in the seven textbooks, whereby Geography 6 = 185 questions, Geography 7 = 293 questions, Geography 8 = 296 questions, Geography 9 = 282 questions, Geography 10 = 233 questions, Geography 11 = 160 questions, and Geography 12 = 269 questions.

3. Methodology and Research Methods

The question of how institutional regulations (curricula, syllabi, textbooks) relate to ESD principles has already been addressed in certain contexts by various researchers [10,11,19]. For example, Bagoly-Simó [19] identified certain ESD skills featured in lower secondary geography curricula in Germany, Romania and Mexico; Kowasch [11] reviewed how resource exploitation and consumption were represented in German geography textbooks; and Leder [10] analysed geography curricula, syllabi and textbooks in India from the perspective of ESD. Although the above studies were conducted in different contexts, they came to the same conclusion: Despite that the subject of geography is closely related to the theoretical constructs of ESD [19] (p. 126), geography curricula and textbooks do not always promote ESD.

To investigate the situation in Vietnam, this study used the Decade of Education for Sustainable Development (DESD) 2005–2014 [2] and its follow-up initiative, the GAP on ESD [3], as a platform and a conceptual premise upon which to review the geography textbooks in Vietnam from two aspects: content and didactics. Specifically, this study investigated how SD issues are integrated into the content of the textbooks, and it assessed the extent to which the questions and tasks in the textbooks promote competencies regarding the demands of ESD. Based on a theoretical approach to ESD, a theoretical framework was developed to analyse textbooks from the ESD perspective.

The content was analysed on the basis of specific learning objectives for the 17 SDGs developed by UNESCO [1]. The UNESCO publication "identifies learning objectives, suggests topics and learning activities for each SDG, and describes an implementation on different levels from course design to national strategies" [1] (p. 7). Each learning objective is described in three dimensions [1] (p. 11): cognitive (knowledge and thinking skills necessary to better understand the SDG and the challenges in achieving it), socio-emotional (social skills that enable learners to collaborate, negotiate and communicate to promote the SDGs as well as self-reflection skills, values, attitudes and motivations that enable learners to develop themselves) and behavioural (action competencies).

However, due to the close relationship between goal 6 (clean water and sanitation) and goal 14 (life below water), here the goals were combined to create a new category: 'water-related topics'. Thus, the content analysis included 16 categories: 'no poverty', 'zero hunger', 'good health and well-being', 'quality education', 'gender equality', 'affordable and clean energy', 'decent work and economic growth', 'industry, innovation and infrastructure', 'reduced inequalities', 'sustainable cities and communities', 'responsible consumption and production', 'climate action', 'water-related issues', 'life on land', 'peace, justice and strong institutions', and 'partnerships for the goals'. Additionally, I differentiated between whether each issue was 'mentioned' or 'discussed' in the textbooks: I used Kowasch's classification [11] (p. 58), where 'mentioned' refers to content that "is named in the continuous or discontinuous text (e.g., diagram or map)", while 'discussed' means content that is dealt with in a book chapter or paragraph, a map, a diagram or at least several sentences.

Didactics was analysed by investigating how questions/tasks in textbooks promote competencies in students. The reason for focusing only on questions/tasks is that they play an important role in stimulating student thinking and promoting competencies. Of course, determining which competencies are most relevant for SD has become increasingly important, such that many scholars have started to outline which key competencies individuals should acquire to help the world society progress in a more sustainable direction. For example, McKeown, Hopkins, Rizi & Chrystalbridge published "Sustainability skills" [20]; Stibbe introduced "Sustainability literacy" [21]; de Haan offered "Shaping

competence" (Gestaltungskompetenz) comprising 12 key competencies [22]; Mogensen & Schnack described "Action competence" [23]; Martens, Roorda & Cörvers outlined "Professional Competences for Sustainable Development" [24]; Wiek, Withycombe & Redman refer to "Key competencies in sustainability" [25]; Rieckmann introduced "Key competencies for sustainable development" [26]; and finally Thomas, Barth & Day presented "Sustainability capabilities" [27]. Based on the research by de Haan [22], Wiek, Withycombe & Redman [25] and Rieckmann [26], the United Nations [1] (p. 10) identified eight cross-cutting key competencies to advance SD; namely: systems thinking competency, anticipatory competency, normative competency, strategic competency, collaboration competency, critical thinking competency, self-awareness competency and integrated problem-solving competency.

While these eight competencies represent a good starting place to review didactics from an ESD perspective, the current national curriculum and the textbooks in Vietnam were issued in 2004 and are not specifically oriented towards competence. Therefore, applying modern competence models from Western countries is not suitable for analysing textbooks in the current context of Vietnam. In this study, I use previous research on ESD in Vietnam and major institutional regulations to deductively develop categories for the theoretical framework, namely the general national curriculum and geography curriculum. The curricula define teaching objectives in terms of content, skill and attitude. Thus, upon completion of the lesson, students should have an understanding of the knowledge, an ability to conduct the skill and be able to vocalize these in a meaningful way.

Based on the guidelines stated in the general national curriculum, I chose to assess the concept of a learner-centred approach that enables action-oriented learning. This represents the overarching principle defined in the national curriculum that is supposed to guide the teaching methods in all subjects. However, although the general national curriculum does not define what action-oriented learning is or how to promote it, the meaning can be gleaned from prior studies. Mogensen & Schnack [23] (p. 62) show that action-oriented teaching-learning can "help students develop their ability, motivation and desire to play an active role in finding democratic solutions to problems and issues connected to sustainable development". Adding onto this, the Organisation for Economic Co-operation and Development (OECD) [28] (p. 14) indicates that acting autonomously is a key competency for students because they need to become fully aware of their identity and establish goals in a complex world, to "exercise rights and take responsibility", to understand one's environment and its functioning. Here, I apply three categories described by Kowasch [11] (p. 60) in order to answer the question "Do geography textbooks/tasks promote action-oriented learning?" The three categories are (1) whether the questions/tasks link to motives and elements of the students' daily lives (linking to everyday life is an important factor for motivation); (2) whether the questions/tasks provide alternative working methods (i.e., SWOT analysis, mapping, teamwork, role play, web search, experimentation, poster); (3) whether the questions/tasks include playful elements (i.e., puzzles, enigmas, quizzes or memory games).

Based on the teaching objectives defined in the geography curriculum in particular, I focused on system thinking, since this is a skill-related objective for lower secondary school and a content-related objective for upper secondary school [29]. System thinking or system orientation has been identified as a key competence for sustainability by many scholars [20,24–26], and system thinking is crucial for advancing SD since it helps individuals to "recognize and understand relationships; to analyse complex systems; to think of how systems are embedded within different domains and different scales; and to deal with uncertainty" [1] (p. 10). However, the geography curriculum (in Vietnam) does not explicitly explain what system thinking is, nor does it suggest a system thinking model. Therefore, I employed the definition of system thinking by Frischknecht-Tobler, Nagel, & Seybold [30] (p. 30), i.e., system thinking "is the ability to describe, reconstruct and model complex areas of reality as systems and to give explanations on the basis of modelling, forecasts...and to design and assess possible courses of action". For coding, I used the competency model for system thinking described by Mehren, Rempfler, Buchholz, Hartig, & Ulrich-Riedhammer [31] (p. 16), who suggest a theoretically derived and empirically validated model for geographic system competence that includes two dimensions; dimension 1 is system organization and system behaviour, and dimension 2 is system-adequate intention to act.

Dimension 1 features the competence of being able to identify a complex reality in the organization as a system and analyse its functions and behaviours. This dimension includes three stages: Stage 1 is where a "student identifies a low number of elements and relations, mainly isolated or monocausal and as a vaguely differentiated set of relationships. His analysis of monocausal developments is based on a weakly developed functional and process understanding" [31] (p. 16). Next, Stage 2 is where "the student identifies a moderate number of elements and relations, mainly linear and as a moderately differentiated set of relationships. His analyses of linear developments bases on an understanding of interrelationships, series and parallel coupling as well as simple stock and flow relationships" [31] (p. 16). Finally, in Stage 3 "the student identifies a high number of elements and relations, mainly complex and as a highly differentiated set of relationships, and as part of nested systems. His analyses of linear and non-linear developments bases on an understanding of feedback and cycles as well as demanding stock and flow relationships, irreversibility, and emergence" [31] (p. 16).

Dimension 2 refers to the ability to develop system-adequate action in the mental space, and this dimension also includes three stages. In Stage 1 "the student develops prognoses and regulative measures based on the monocausal analysis of effects, vague anticipation of effects and weakly defined reduction of complexity" [31] (p. 16); in Stage 2 "the student develops prognoses and regulative measures based on the linear analysis of effects, anticipation of effects and moderately defined reduction of complexity" [31] (p. 16); and in Stage 3 "the student develops prognoses and regulative measures based on the complex analysis of effects, the anticipation of effects and highly defined reduction of complexity as well as awareness of limited predictability" [31] (p. 16). To specify the competence stages, Mehren et al. formulated criteria to precisely identify the levels of the stages (Table 1).

Table 1. Categories to analyse didactics in the geography textbooks of Vietnam.

Category	Definition	Coding Rule
Learner-centred material that enables action-oriented outcomes	Students are encouraged to act [10] (p. 152)	According to Kowasch [11] (p. 10) a. Everyday life: Do the tasks/questions link to motives and elements of the students' daily lives? b. Action-oriented: Do questions/tasks provide alternative working methods, such as learning circles, teamwork, role play, web search, experimentation, etc.? c. Playful elements: Do questions/tasks include puzzles, enigmas, quizzes or memory games?
System thinking	The ability to describe, reconstruct and model complex areas of reality as systems and to give explanations on the basis of modelling, forecasts... and to design and assess possible courses of action [30] (p. 30)	According to Mehren et al. [31] (pp. 9–10) a. The number of elements and relations (low = 3; moderate = 4–5; high > 5). b. The type of networking (monocausal = A acts on B; linear = for example, A acts on B, B acts on C; complex = for example, A acts on B, B acts on C, and C, in turn, acts on A). c. The understanding of system-specific characteristics (such as non-linearity, emergence, limited predictability)
Problem-solving	The ability to apply theoretical knowledge to solve problems in real life.	Do questions/tasks use scenarios relating to real life? [32]

In research investigating the perception of geography teachers in Vietnam regarding ESD, Nguyen [4] found that problem-solving is regarded as one of the most important ESD learning objectives. Problem-solving was also identified as a key competence by the UNESCO [1] (p. 10), which describes it as "the overarching ability to apply different problem-solving frameworks to complex sustainability problems and develop viable, inclusive and equitable solution options that promote sustainable development, integrating the above-mentioned competences". In this study, problem-solving is regarded merely as the ability to apply theoretical knowledge to solve problems in real life. In order to code questions/tasks as promoting problem-solving, we used the key feature of problem-based learning, which is "the use of scenarios relating to real life as a point of departure for the learning process" [32].

After analysing content and didactics in the textbooks, one can interpret the overarching ESD approach that the textbooks promote. Vare and Scott [33] and Wals [34] differentiate two approaches to ESD: the instrumental approach (ESD 1) and the emancipatory approach (ESD 2). According to Vare and Scott [33], ESD 1 aims at (1) promoting/facilitating changes in what we do; (2) promoting (informed, skilled) behaviours and ways of thinking, where the need for this is clearly identified and agreed; and (3) learning for sustainable development. Conversely, ESD 2 includes three different characteristics: (1) building capacity to think critically about [and beyond] what experts say and to test sustainable development ideas; (2) exploring the contradictions inherent in sustainable living; and (3) learning as sustainable development.

A qualitative text analysis was conducted with the support of the software MAXQDA. Based on the theoretical framework, I established the main deductive categories, including three categories for didactic analysis (Table 1) and 17 categories for content analysis. The geography textbooks were then deductively coded for the analysis.

4. Results

4.1. Representation of SD Themes

SD themes were found in every textbook (Figure 1). The main emphasis was on the themes 'life on land' and 'water-related topics' which made up 61 segments (42.4%) and 18 segments (12.4%), respectively, out of the total 145 code segments. These were followed by sustainable cities and communities (eight segments), good health and well-being (seven), decent work and economic growth (seven), reduced inequality (seven), climate action (seven), and partnerships for the goals (seven). Quality education was represented in none of the segments (due to the fact that this is both a goal itself and a means for obtaining the other SDGs. Besides, it is difficult to find a geographical dimension in this topic).

The theme 'life on land' mostly dealt with the following specific topics: the role of forest and deforestation, environment protection in general, land degradation, biodiversity loss, and overexploitation (Table 2). This theme was mentioned in 24.8% of the retrieved segments and discussed in another 17.2%. The second most represented theme, 'water-related topics', mostly dealt with water pollution and the disappearance of biodiversity and aquatic ecosystems (Table 3). The percentage of 'mentioned' and 'discussed' segments were 6.9% and 5.5%, respectively. Two other topics related to water, namely sources of water (rivers, lakes, seas, oceans) and the hydrological cycle were introduced in textbook 6 and 10, respectively, but these topics were considered core knowledge, not SD themes.

Table 2. 'Life on land' topics in the geography textbooks.

'Life on Land' Topics	Textbook
The role of forest and deforestation	12, 10, 9, 8, 7
Environment protection in general	12, 11, 10, 9, 8, 7
Land degradation	12, 10, 9, 7
Biodiversity loss	12, 11, 10, 8, 6
Overexploitation	12, 8, 7

Table 3. 'Water-related topics' in the geography textbooks.

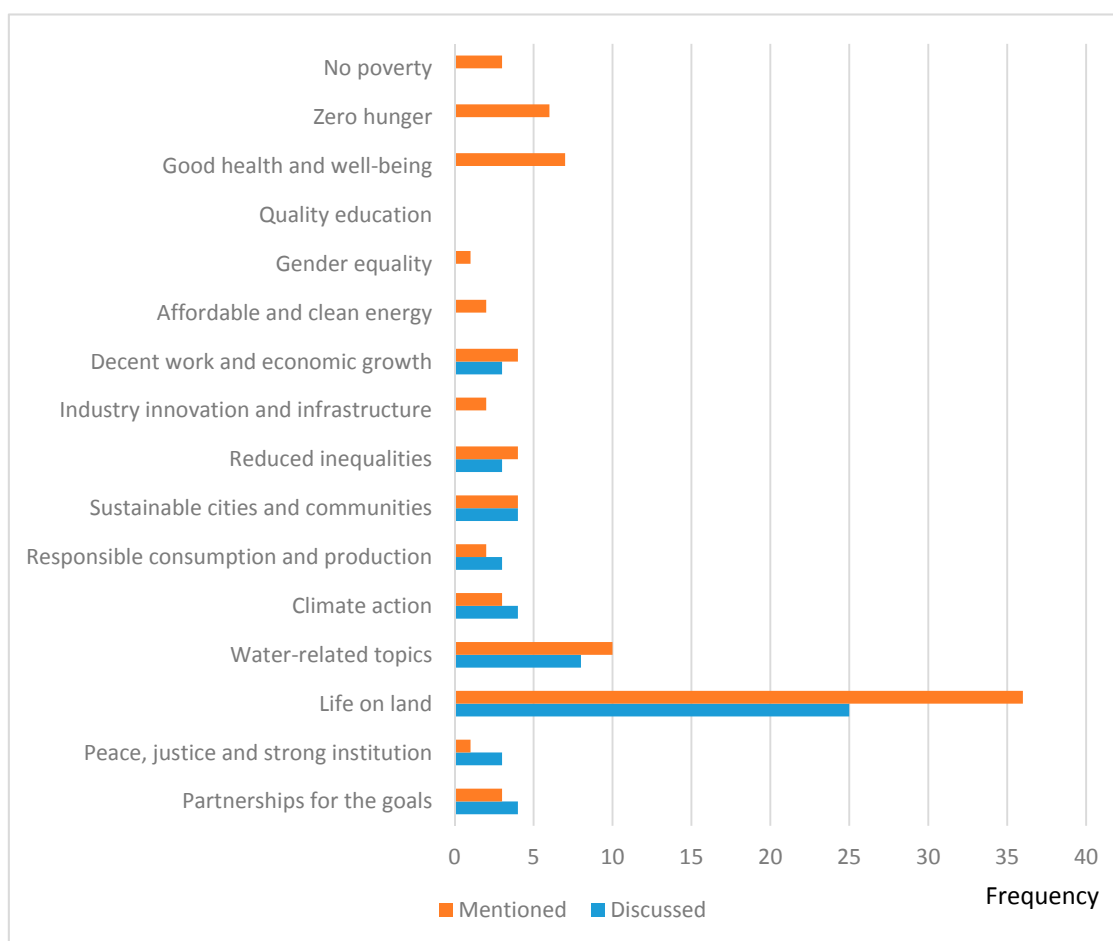| 'Water-Related Topics'	Textbook
Water pollution	12, 11, 9, 8, 7
The disappearance of biodiversity and aquatic ecosystems	12, 9, 7
Safe drinking water	7
Reasonable exploitation/use of marine resources	12
Methods to protect marine environmental resources	9

(Source: Author).

Figure 1. Representation of SD themes in Vietnam geography textbooks (Source: Author).

Economic aspects of SD seemed not to be a major consideration in the textbooks, with 17 code segments (11.7%). Specific issues represented included unemployment as a serious problem in Vietnam due to undeveloped labour markets (textbook 12, page 75; textbook 9, page 16), distribution of formal employment rates per sectors (textbook 12, page 74), industry development without negative effects on the environment (textbook 12, page 180 and 197), listing some types of clean energy (textbook 10, page 125 and 162), mineral conservation and efficient use of minerals (textbook 10, page 161, 162; textbook 8, page 98).

Social aspects of SD filled 24% (35 segments) of the total 145 retrieved code segments. Almost all of the themes were mentioned only in name or superficially described (e.g., poverty, hunger, health and well-being, gender equality), with few exceptions relating to the themes 'sustainable cities and communities', 'reduced inequalities' and 'peace, justice and strong institutions'. In the textbooks, 'sustainable cities and communities' dealt with urbanization and its problems in general and in different regions of the world (textbook 12, page 79; textbook 10, page 97; textbook 7, page 99, page133). Inequalities represented in the textbooks included inequality in terms of wealth, income and consumption between developed and developing countries (textbook 10, page 164, page 165; textbook 11, page 49, page 108), inequality between the rich and the poor in the same country (textbook 11, page 25). All the continuous and discontinuous texts dealing with 'peace, justice and strong institutions' were found in textbook 11, with the focus on religious conflict and terrorism threatening the world and regional peace (page 15, page 31, page 32). The concept of 'justice' was not present.

The theme 'partnerships for the goals' can be understood as an emphasis on the continuing role of governance to SD. It was represented in seven code segments in the textbooks, with foci on economic globalization promoting international partnerships (textbook 11, page 10), the formation of regional

markets and their role (textbook 11, page 12; textbook 8, page 60), and partnerships between countries to address global issues (e.g., environment, peace, poverty, hunger).

A total of 60.7% code segments mentioned SD issues in the discontinued text, while the other 39.3% discussed the issues in the continuous parts of the text. The mentioned code segments fell into almost all the topics, where they were especially prevalent in the topics of 'no poverty', 'zero hunger', 'good health and well-being', 'gender equality', 'affordable and clean energy', 'industry', and finally 'innovation and infrastructure'. There were only a few cases when the number of 'discussed' code segments was higher than the number of 'mentioned' segments; this occurred for the topics of responsible consumption and production, climate action, partnerships for the goals, and finally peace, justice and strong institutions.

Interestingly, the topics of industry innovation and infrastructure were not major considerations in the discussion of SD in geography textbooks, even though Vietnam promotes ESD for the specific purposes of industrialisation, modernisation and international integration [15]. In geography textbooks, industrialization, with reference to SD, was implicitly mentioned two times in textbook 12, specifically, industry development without a negative effect on the environment. The ninth goal of SDGs, which is to "build resilient infrastructure, promote sustainable industrialization and foster innovation" was not explicitly reflected in the textbooks; however, the phase 'industrialisation and modernisation' was mentioned nine times.

The statistics on SD topics by grade (Table 4) show that Geography 12 contains the highest proportion of the total retrieved segments (28%). Geography 7 comes next (19%), and Geography 11, 10, 9 and 8 follow with 17%, 12%, 12% and 11%, respectively. SD themes are seldom placed in Geography 6 (1%).

Table 4. Statistics on SD issues in geography textbooks.

	Geography 12	Geography 11	Geography 10	Geography 9	Geography 8	Geography 7	Geography 6
Partnerships for the goals	1	3	1	0	2	0	0
Peace, justice and strong institution	0	4	0	0	0	0	0
Life on land	20	4	6	9	10	11	1
Water-related topics	7	1	1	3	3	3	0
Climate action	2	1	2	0	0	2	0
Responsible consumption and production	0	0	2	0	1	1	1
Sustainable cities and communities	1	0	2	0	0	5	0
Reduced inequalities	1	4	2	0	0	0	0
Industry innovation and infrastructure	2	0	0	0	0	0	0
Affordable and clean energy	0	0	2	0	0	0	0
Decent work and economic growth	3	2	0	2	0	0	0
Gender equality	0	1	0	0	0	0	0
Quality education	0	0	0	0	0	0	0
Good health and well-being	2	1	0	1	0	3	0
Zero hunger	2	2	0	1	0	1	0
No poverty	0	2	0	1	0	0	0
Total	41 (28.3%)	25 (17.2%)	18 (12.4%)	17 (11.7%)	16 (11.1%)	26 (17.9%)	2(1.4%)

(Source: Author).

4.2. Didactics Analysis

From the analysis, we found that merely 263 (15%) of the questions/tasks (out of a total 1718 questions/tasks) in the textbooks promoted ESD-relevant competencies. Of those 263, the vast majority (93.5%; 246) were questions that promoted system thinking (Table 5). Questions/tasks

promoting action-oriented were rarely found in the textbooks, and none of the questions/tasks featured problem-solving competencies.

Table 5. Statistics on questions/tasks promoting ESD-relevant competencies in geography textbooks.

|		Geography 12	Geography 11	Geography 10	Geography 9	Geography 8	Geography 7	Geography 6	Total
Action-oriented	**Playful elements (task include quiz, memory game, puzzle)**	0	0	1	0	0	0	0	1
	Alternative working methods	6	2	0	1	1	0	2	12
	Everyday life towards SD	0	0	3	0	1	0	0	4
System adequate intention to act	**Stage 3**	1	0	0	0	1	0	0	2
	Stage 2	0	0	0	0	2	0	0	2
	Stage 1	0	0	0	0	0	0	0	0
System organization and behavior	**Stage 3**	5	7	1	14	9	0	0	36
	Stage 2	6	7	4	18	8	4	1	48
	Stage 1	15	6	22	23	32	46	14	158
		33	22	31	56	54	50	17	263

(Source: Author).

In the total 17 action-oriented questions/tasks, the most common were questions/tasks giving alternative working methods (12) with the following specific methods: making a report (four), mapping (four), teamwork (one), role play (one), experiment (one) and field trip (one). Rarely did questions/tasks refer to students' everyday lives (four) or include playful elements (one).

Concerning system thinking questions/tasks, the overwhelming majority dealt with system organization and behaviour. Questions/tasks related to system-adequate intention to act accounted for a very modest proportion in all textbooks (four questions). In total, 246 questions promoted system thinking, and of these more than 60% were at stage 1, while the percentage of stages 2 and 3 questions was 19.5% and 14.5%, respectively. Overall, the majority of the questions/tasks in the textbooks featured very few elements, and relations mainly focused on monocausal relationships.

The most common type of question/task at stage 3 required students to analyse the pros and cons of a location's geographical factors in the context of its economic development, e.g., "*How do geographic location and physical geography conditions affect the economic development of Japan (analysing the pros and cons)?*" (textbook 11, page 78). Rarely were students required to analyse relationships between natural components, e.g., asking students to analyse the relationship between components of the natural environment in a particular location (textbook 9, page 151).

The questions/tasks promoting system thinking did not require students to use a mind map, with the exception of only one question in textbook 8, page 73 (Figure 2).
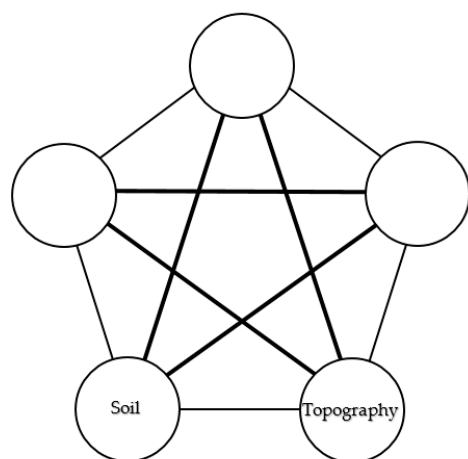
Fill in the blank circles with name of natural components and use arrows to represent the relationship between them.

Figure 2. An example of a mind map question in geography textbook 8.

It should be noted that many of the questions/tasks in the textbooks could have promoted system thinking, but the answers were provided directly in the text just after the question, e.g., "*How does the dense network of rivers in Vietnam affect transportation?*" (textbook 10, page 139); right below the question was a paragraph explaining the impact of climate, weather and water regime on transportation. In this case, students would not have to go through the process of reasoning to find out the answer. Therefore, the question was not classified as promoting system thinking.

5. Discussion

5.1. How Are SD Issues Integrated into the Content of the Textbooks?

To some extent, SD issues were integrated into the textbooks. However, the issues were found sporadically in short paragraphs of text without discussing related controversies and human-environment interaction. Causes and consequences of the issues were represented, but not explained comprehensively.

The concept of SD was not explicitly represented in the textbooks. However, textbook 10 adapted the definition of SD in the Brundtland Report [35] (p. 8) to assert:

> *We must at all costs use resources reasonably, protect the environment, and promote social development so that today's development does not compromise the ability of future generations to meet their own needs.* (page 163)

Textbook 10 also introduced the goal of SD as followings:

> *Real development must ensure that people have a higher material and spiritual life within a healthy environment. That is the goal of sustainable development that human beings are aiming at.* (page 163)

The statements were not put into a specific context, and no example or explanation was given for abstract terms such as "use resources reasonably", "social development", and "healthy environment". This illustrates strong rhetoric in approaching the SD issue in the textbook.

In relation to environmental aspects in the textbooks, they mostly focused on environmental effects and neglected the social and economic values. Taking the issue of 'the role of forest and deforestation' as an example, this was the most frequently mentioned/discussed topic in all the textbooks (13 code segments) under the theme 'life on land'. The role of the forest was addressed in textbook 10 (page 111) and textbook 12 (page 156). Causes of deforestation were mentioned/addressed in the context of harvesting and exporting timber, slash-and-burn farming, and making more land available for cattle ranching (textbook 10, page 165; textbook 7, page 21). The most common reasons for deforestation were not mentioned; these include illegally removing trees from forests for use as fuelwood (https://www.worldwildlife.org/threats/deforestation), harvesting timber to create commercial items (e.g., paper, furniture, homes, etc.), and housing and urbanization. The consequences of deforestation were mentioned, and included deforestation in the Amazon as one of the contributing factors to regional and global climate change (textbook 7, page 138), soil erosion and flooding (textbook 9, page 63), desertification (textbook 10, page 165), loss of species (textbook 12, page 172), and reduced groundwater levels (textbook 12, page 172). However, the above environmental effects were not coherently explained. Other long-term effects of deforestation were overlooked, including water cycle disruption, contributing to global greenhouse gas emissions, and social consequence such as the disturbance of native people living in the rainforests.

As another example, I highlight the theme 'water-related topics'. This was the second most represented SD theme in the textbooks (17 code segments). Water pollution was explained as being caused by pesticide use in agricultural fields (textbook 7, page 57), dumping of industrial and municipal wastewater (textbook 11, page 14; textbook 8, page 120; textbook 7, page 57), oil pollution (textbook 12, page 193; textbook 8, page 90; textbook 7, page 58), and deforestation (textbook 9, page 143; textbook 8, page 120), but textbooks did not give coherent explanations on the underlying causes and processes. Textbooks occasionally mentioned the consequences of water pollution, but in an abstract way as

causing great losses (textbook 12, page 192; textbook 11, page 14) and sometimes sporadically as negatively impacting sea tourism (textbook 9, page 143) or causing toxicity to aquatic life (textbook 9, page 143; textbook 12, page 60; textbook 8, page 90). Clean water scarcity was mentioned in textbook 7, page 34 (but as a direct consequence of the population boom in the tropics instead of water pollution) and textbook 11, page 14, and, overall, the textbooks did not describe the consequences of water pollution on human health. Furthermore, they totally excluded long-term perspectives on water shortage, the global unequal distribution of access to safe drinking water and sanitation facilities, and the connection many people have to the sea and the life it holds. In general, 'water-related topics' were represented in a fact-oriented approach rather than a conflicted approach.

The textbooks also did not describe the possibility of environmental action from an individual perspective. For example, textbook 9, page 143 dealt with marine environmental protection in Vietnam by giving general methods, namely investigating and assessing marine resources, protecting mangrove forest, protecting the coral reef, protecting aquacultural resources, and preventing water pollution. Although these generalizations do give activities to conserve marine resources, they do not encourage students to take action because they are unspecific and do not relate to students' own lives. This is probably because the geography curriculum and the textbooks were not oriented towards competence when they were issued in 2004.

Environmental topics ('life on land', 'water-related topics', 'resource-related issues', 'climate action') were a major consideration in the textbooks. The prevalence of integrating environmental aspects compared to socio-economic aspects can be explained by the institutional policy that was put into place when the prime minister of Vietnam decided that environmental issues should become mainstream in general education. As such, environmental education has been integrated into curricula at all educational levels since 2001 [36].

Regarding the resource topic, the textbooks tended to convey a sense of indoctrination and moralization. In textbook 12, page 61, resources focussed on protection, such as protecting soil resource, water resource, mineral resource, tourism resource, and were mentioned in discontinuous texts. The texts stated that we need to protect the resources from pollution and should have reasonable use of resources but did not address any clear reason why we should do it. It means resources protection was regarded as a 'good' and unquestionable thing. 'Resource-related issues' were not considered in political, socio-economic, and cultural contexts and were not introduced in a conflictual approach. Similarly, in textbook 10, non-renewable resources were dealt with as follows:

> *Non-renewable resources include minerals that are being exploited for industrial use. The formation of mineral deposits takes millions of years, so that these resources cannot be renewed when they are used up. Therefore, it is necessary to make efficient use of mineral resources and to produce alternative materials (for example, to manufacture synthetic plastics to replace metal parts...).* (page 161)

The textbook explained the need to use mineral resources efficiently and produce alternative materials just because they "cannot be renewed". It excluded critical perspectives on environmental and societal impacts of mineral exploitation, the challenges that economies heavily dependent on natural resources are facing and the discussion on resource curse. Therefore, it could not provide students with an understanding of the large-scale economic, historical, political and socio-economic aspects of mineral resources.

The tendency to moralize resources protection could not help students develop their own opinion and promote critical thinking. Instead of indoctrinating learners and educating them to have a predetermined mode of thinking and acting, educational approaches should provide students with the "possibility to shape their own future" [37] (p. 183) and develop their own approaches to *learn from* rather than to *learn for* something [38] (p. 61). Yet, it should be noted that this idea of self-determination is in "a state of tension with claims for education "for" SD and behaviour modification" [39] (p. 12).

Social aspects of SD were often given without coherent explanation, and the issues were represented sporadically and in a fragmented way. Indeed, textbook 11 (page 25) said "*In most Latin American*

countries, the gap between rich and poor is very large". However, how large the gap was as well as the causes and the consequences of the gap were not addressed. Urbanization was found in textbook 12 (page 79), stating that "*Urbanization has caused some problems such as environmental pollution, security and safety, etc., which need to be addressed*", and in textbook 7 (page 133), which stated "*The rapid urbanization in low-income countries (in Central and South America) has led to serious consequences*". Nevertheless, there was no further explanation of the consequences. This would not allow students to have insights into the problems.

Regarding economic aspects of SD in the textbooks, economic growth and industry development normally were considered to be 'good'. The cons of these processes were inadequately given, and only emerged in textbook 12:

> *The industrial development of the region [South-eastern of Vietnam (This region includes one municipality, Ho Chi Minh City; and five provinces: Đồng Nai, Bình Dương, Bà Rịa–Vũng Tàu Province, Bình Phước and Tây Ninh.)] is not separated from the expansion of foreign direct investments (in the period of 1988–2006, the region had attracted the registered capital of 42019.8 million USD, accounting for more than 50% of the foreign investment of the whole country). Consequently, environmental issues must always be addressed. The development of the industry also needs to avoid damaging the tourism sector that the region has full potential'.* (page 180)

> *Regarding industry, promoting key industries, rapidly developing high technology industries without polluting the environment, creating competitive products in the market . . . .* (page 197)

The environmental issues were mentioned, but without further explanation of how they were being or could be addressed. In addition, the way environmental issues are mentioned in the above excerpt is not clear and could be wrongly interpreted by students as being a direct consequence of attracting foreign investments. Furthermore, the textbooks completely excluded aspects of sustainable economic development defined in the SDGs, such as the concepts of sustained, inclusive and sustainable economic growth, full and productive employment, decent work, sustainable infrastructure and industrialization (and its related challenges and conflicts), and the pitfalls of unsustainable industrialization. Interestingly, although Agenda 21 of Vietnam identified sustained economic growth, green industry, and sustainable industry development as priorities, these contents were not realized in the textbooks [14]. This reflects inconsistencies in the translation of policy into practice (developing textbooks).

In relation to the discussion on the instrumental and the emancipatory approach to ESD [33,34], results of this study showed that the ESD discourse promoted in geography textbooks in Vietnam tends to use the instrumental approach. In this context, it will become imperative to conduct further research investigating whether the pedagogical practice in geography education in Vietnam reflects the same tendency.

Although this study does not aim at discussing whether textbooks should reflect a political will, it has been acknowledged that in general, "textbooks contribute to the unquestioned preservation of the social, economic and political status quo" [40] (p. 3). However, the findings raise the concern about the translation of SD policy into practice, in this case into textbooks: Some important SD priorities for Vietnam, such as sustained economic growth, the green industry, and sustainable industry development, were totally left out of the textbooks. Further, as it has been mentioned above that the geography textbooks favour the ESD 1 approach, with the belief that "learning is a tool to facilitate choice between alternative futures which can be specified on the basis of what is known in the present" [33] (p. 192), this type of instrumental approach would be appropriate to reflect political will. Namely, the instrumental approach to ESD is able to bring about clear benefits to the environment and society in the short term, and it suggests that "we just have to do the obvious things" [33] (p. 193). In light of the observation that geography textbooks in Vietnam use the ESD 1 approach, which would be able to promote a political agenda, the question could be posed to textbook authors as to whether selected knowledge in the textbooks should adequately reflect the priorities identified in the strategic orientation for SD in Vietnam.

All in all, the SD content given in the textbooks was fact-based but fragmented. Interrelations between ecological, economic and social aspects as well as between humans and the environment were barely facilitated, since topics about human and physical geography were presented separately instead of in an integrated manner. The results also demonstrate that the textbooks take the perspective of indoctrination and moralization.

5.2. Do Questions/Tasks in the Textbooks Promote Competencies Regarding Demands of ESD?

The questions/tasks in the textbooks were mostly fact-based and encourage students to reproduce information rather than develop certain competencies. The most common tasks were summarizing/reproducing a definition from the textbooks (e.g., "*What are minerals*?" (textbook 6 page 50) and summarizing/reproducing information from the textbooks (e.g., "*What are the characteristics of limestone mountains*?" (textbook 6 page 45) or "*Describe the characteristics of desert climate*" (textbook 7 page 63).

5.2.1. System Thinking Questions/Tasks

Generally, the system thinking questions in the textbooks mostly promoted monocausal relationships, such that they described a factual approach to SD rather than promoting linear and complex approaches. That the vast majority of the system thinking questions were for promoting dimension 1 (system organization and system behaviour) and ignored dimension 2 (system-adequate intention to act). This could be because textbook authors were unaware of dimension 2, meaning that they did not know they should include system-adequate intentions to act.

Only the four following questions in all textbooks promoted dimension 2:

- Question 1: "What should we do to sustainably exploit and protect marine resources?" (textbook 8, page 90)—Stage 2.
- Question 2: "What should we do to protect rivers from pollution?" (textbook 8, page 120)—Stage 2.
- Question 3: "How do we do to keep the environment here [North and Northeast Vietnam] clean and develop sustainable economy?" (textbook 8, page 142)—Stage 3.
- Question 4: "Based on the analysis of the relationship between population and food production in the Red River Delta, try to suggest solutions" (textbook 12, page 154)—Stage 3.

However, two of these questions (questions 1 and 3) are abstract and merely give general duties to students instead of meaningfully promoting students to take action based on the analysed relationship. Indeed, without giving prior introductions on what "sustainably exploit" and "sustainable economy" are, students were asked to develop regulative measures for them.

Some questions promoting dimension 1 also failed to establish a logical connection between the information provided in the text and the questions asked, such as the following questions:

- *Based on Figure 29.1 'Coffee area and yield of the Central Highlands in comparison to the whole country', comment on the percentage of the coffee area and volume of the Central Highlands in comparison to the whole country. Why is coffee planted the most in this area*? (textbook 9 page 106)—Stage 1.
- *Based on which favourable conditions, tea (in North of Vietnam) accounts for a large proportion in terms of area and yield in comparison to the whole country?* (textbook 9 page 68)—Stage 1.

In order to answer these questions, students should have knowledge on ecological requirements for growing coffee and tea as well as geographical conditions of the regions; however, the textbooks do not provide sufficient information in the text nor concrete methodological suggestions for answering the questions.

5.2.2. Action-Oriented Questions/Tasks

Very few questions/tasks gave students alternative working methods. The most commonly used method was making a report; however, this approach is not really inventive for training action

competence. This lack of action orientation is a problem because, as textbooks are the most commonly used means for teachers to structure their lessons, teachers may be hesitant to promote active teaching methods. This, on the one hand, highlights that teachers need to be more active and effortful in searching for and implement action-oriented methods in teaching. On the other hand, this suggests that teacher training institutions in the country should take into account action-oriented learning when training student teachers. Further, as only four questions/tasks referred to students' everyday lives, this demonstrates that the textbooks do not attempt to motivate students to act by linking SD issues to their own lives.

Therefore, these findings suggest that teachers and textbook authors should pose questions that "help students to question their own lifestyle, develop new ideas, and promote a culture of argument and not a culture of response" [11] (p. 74).

Generally, as textbooks only included 17 action-oriented questions/tasks, it goes without saying that they failed in realizing the overarching principle of the general national curriculum in promoting action-oriented learning. This failure is due in part to the fact that the general national curriculum does not provide specific means and methodologies to promote action-oriented learning.

6. Conclusions

In general, the textbooks contribute, to a certain extent, towards promoting ESD through their contents and didactic approach. However, they still harbour several drawbacks. In terms of content, the textbooks' main approaches to SD contents are description and indoctrination. SD themes are represented in short collections of information that normally only provide a one-dimensional perspective on the issues. Controversial issues requiring students to offer their opinions have been omitted. In terms of didactic approach, almost all questions/tasks ask students to memorize and reproduce information and rote learning rather than help them promote ESD competencies. This reconfirms that ESD remains an add-on issue to an overcrowded curriculum [41] (p. 41). These findings are in line with other studies [10,11,19] which have examined how the subject of geography at school relate to ESD principles; these studies also indicate that geography textbooks do not always facilitate ESD, despite the close links between the content of geography and ESD.

The current geography curriculum and textbooks were developed in 2004 and, given the above-indicated content and didactic approaches, they seem to be obsolete. In practice, Vietnam is preparing for an educational reform to replace the current curriculum with a new one focusing on competency-based approaches [4] (p. 345). Despite acknowledging that ESD implementation is a recommendation but not compulsion at both the international and national level, this study still suggests that textbook authors and curriculum developers should take ESD principles into account in the future curriculum in general and in the future geography curriculum in particular. First, SD topics and controversial issues should be represented coherently with multi-dimensional perspectives to help students understand the complexity of contradictions, and SD issues should be presented while avoiding indoctrination and moral education because "what is (and can be) known in the present is not adequate" [33] (p. 193). Therefore, "any learning must be open-ended" [33] (p. 193), and this requires "pluralistic and interconnected perspectives" in "the frame of school geography" and a "more democratic classroom contributes to develop an own moral compass" [39] (p. 1). Secondly, questions/tasks should be diversified and designed to train students' competencies (not only the indicated competencies in this analysis but also other competencies under the framework of ESD). This might mean that textbook authors could implement questions that include higher-order thinking skills instead of focusing on summarizing/reproducing information, and teachers could integrate challenging questions in their teaching [42]. It is imperative to conduct further research to clarify specifically how questions/tasks can be diversified and help train students' competencies. Thirdly, the separate approach to human and physical geography reflects the need to favour a problem-based and integrated approach to topics presented in the textbooks. Finally, the gap between educational objectives defined in the general curriculum and the didactic approach in the textbooks needs to be

explicitly addressed. To do so, Vietnam should establish educational standards for all subjects and a methodological framework for selecting subject contents and teaching/learning approaches.

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